

Global Green Affordable Housing Cost Estimate

Type of Measure	Incremental Cost	Per Unit Incremental Cost	Annual Energy Savings (kBtu/year) Red values are in Kbtu	Simple Payback	Comments
<b>Energy Costs</b>					
<b>New Construction</b>					
Orient Buildings on E/W Axis for Solar Access			0.53	0.0	
Install Hot Water Jacket Insulation.	\$ 1,029	\$ 49	0	N/A	In Santa Monica, efficient water heaters must already be installed. Jackets do not increase the efficiency very much.
Install Faucets with Flow Reducers			0	N/A	Required by Santa Monica Code 7.18
Install Low-Flow Toilets			0	N/A	Required by Santa Monica Code 7.18
Install Tankless Hot Water Heaters	\$ 11,550	\$ 550	132,510	14.5	
Central Hot water system - central boiler	\$ 13,266	\$ 632	101,000	21.9	
Central Hot water system - pulse boilers	\$ 1,552	\$ 74	137,700	1.9	
Install On-Demand Hot Water Circulation Pump	\$ 8,400	\$ 400	(126,420)	N/A	Not an EEM; saves water instead of energy
Install Compact Fluorescent Light Fixtures and Lamps (2)	\$ 2,226	\$ 106	See "Lighting Plan"	3.5	Not an EEM unless builder goes with performance approach on new Santa Monica code.
Install 1 exterior motion detecting light	\$ 630	\$ 30	See "Lighting Plan"	17.9	
Install Occupancy sensors in corridors. Photoelectric.	\$ 50	\$ 2	See "Lighting Plan"	1.4	
Install Insulation-Compatible Recessed Lighting Fixtures			0	N/A	Required by 1998 Title 24, Part 1, Section 150.k.4.
Select Light Colored Roofing	\$ -	\$ -	0	N/A	Not enough energy impact to change the energy use in the building. Not an EEM. No cost impact; specification change. Not enough temperature swing in Santa Monica to change energy use in buiding.
Provide Wall Insulation that Exceeds Title 24 Requirements	\$ 3,801	\$ 181	2,310	61.2	Assume 2x6 framing (per W. Wells). This doesn't save enough energy to be cost effective because of the mild temperature swings in Santa Monica.
Install Ceiling Insulation that Exceeds Title 24 Requirements	\$ 1,540	\$ 73	840	68.2	Likewise, installing insulation greater than what is already required by Title 24 is not cost effective.
Replace fiberglass with blown-in insulation in 2x6 stud walls	\$ 1,106	\$ 53	1,890	21.8	While the blown-in insulation does have better thermal properties than batts, it does not make the measure cost effective.
Install Double-Glazed Wood or Fiberglass Windows			0	0.0	Dual-Pane, Low E windows; Required to meet SM compliance

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Upgrade gas space heaters with through-the-wall heat pumps	\$ 41,727	\$ 1,987	630	More than 20 years	Not Cost Effective because Energy End Use is very heavily weighted on Hot Water (there is not enough energy being used by air conditioning to make the changeout worth the cost).
Incorporate Natural Cooling (ventilation) and Heating (thermal mass)			N/A	N/A	Not Cost Effective in Santa Monica due to relatively small daily temperature swings.
Pre-Plumb for Solar Hot Water Heater	\$ 20,160	\$ 960	0	N/A	No Energy Savings; this is a preventative measure to avoid substantial costs later on.
Install Solar Water System	\$ 24,100	\$ 1,148	214,200	18.8	
Install Photovoltaic Panels	\$ 80,000	\$ 3,810	58,601	50.8	PV system is expensive to begin with. In Santa Monica, there is an automatic 15% reduction in electricity generation due to morning fog.
<b>Rehabilitation Projects</b>					
Upgrade gas space heaters with through-the-wall heat pumps	\$ 41,727	\$ 1,987	93,870	More than 20 years	Not Cost Effective because Energy End Use is very heavily weighted on Hot Water (there is not enough energy being used by air conditioning to make the changeout worth the cost).
Install compact florescent light fixtures (2)	\$ 2,226	\$ 106	See "Lighting Plan"	3.5	
Replace single-pane aluminum windows with double-pane wood or vinyl windows	\$ 48,111	\$ 2,291	153,930	More than 20 years	Even though this measures saves a lot of money every year, it still focuses on heating and cooling energy which is a small portion of the total energy use.
When reroofing, use light colored 40-year composition roofing	\$ 16,527	\$ 787	0	N/A	Not enough energy impact to change the energy use in the building. Not an EEM. No cost impact; specification change. Not enough temperature swing in Santa Monica to change energy use in buiding.
<b>Appliances (for both New Construction and Rehabilitation)</b>					
Install Energy Star, Low Water Use Dishwasher	\$ -	\$ -	66,780	#REF!	Largest benefit is on decreased water use. No Cost information yet.
Install Energy Star verticle axis washing machine	\$ 1,407	\$ 67	29,400	9	Go to <a href="http://www.energystar.gov">www.energystar.gov</a> for a list of qualifying equipment
Install Energy Star Refrigerator	\$ 1,281	\$ 61	12,390	3.8	Costs from PG&E spreadsheet (minus PG&E rebate)

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Select Low-E or Heat Mirror Windows			0	0.0	Dual-Pane, Low E windows; Required to meet SM compliance
Install Ceiling Fans	\$ 6,111	\$ 291	0	N/A	No energy Savings; owner-dependent
Install Forced Air Furnace AFUE >= 90%	\$ 7,518	\$ 358	420	More than 20 years	Very little heating energy in Santa Monica.
Install Ductwork within Conditioned Space				N/A	Multi-floor buildings already have ducts in conditioned space in most units (all except top floor).
Use Duct Mastic on all Duct Joints				N/A	Required by 2001 T24